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(71)Applicant : ASAHI CHEM IND CO LTD

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(72)Inventor : NAMIKATA TAKASHI  
YOKOYAMA CHOMEI

### (54) LITHIUM-ION SECONDARY BATTERY ELEMENT

#### (57)Abstract:

PROBLEM TO BE SOLVED: To increase electrode utilization efficiency, etc., and decrease the rate of short-circuiting, by making up a separator out of a gel electrolyte containing a cross-linked polyvinyliden fluoride, etc., and causing the lengths of confronting sides of the separator, negative-electrode and positive-electrode active material layers, etc., to be expressed by specific relationships.

SOLUTION: The lengths of confronting sides of a separator, a negative-electrode active material layer, a positive-electrode active material layer, and positive and negative electrode collectors, are expressed by expression I (where, W means two sides confronting each other, W<sub>m</sub> is the length of the positive and negative electrode collectors, W<sub>s</sub> is the length of the separator, W<sub>c</sub> is the length of the negative-electrode active material layer, and W<sub>a</sub> is the length of the positive-electrode active material layer), and expression II (where, L means two sides confronting each other and normal to the W, L<sub>m</sub> is the length of the positive and negative electrode collectors, L<sub>s</sub> is the length of the separator, L<sub>a</sub> is the length of the positive-electrode active material layer, and L<sub>c</sub> is the length of the negative-electrode active material layer. The lengths of the positive and negative electrode collectors equal to each other.). The separator is made up of a gel electrolyte including a cross-linked polyvinyliden fluoride and/or a vinyliden fluoride copolymer, and their mixture.

$$W_m \geq W_s \geq W_c \geq W_a$$

$$L_m = L_s = L_a = L_c$$

II

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引用例①

(19) 日本国特許庁 (JP)

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(71) 出願人 000000033

旭化成工業株式会社

大阪府大阪市北区堂島浜1丁目2番6号

(72) 発明者 南方 尚

静岡県富士市駿島2番地の1 旭化成工業株式会社内

(72) 発明者 横山 朝明

静岡県富士市駿島2番地の1 旭化成工業株式会社内

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(54) 【発明の名称】 リチウムイオン二次電池要素

(57) 【要約】

【課題】 電極の利用効率およびバックリング効率が高く、しかも短絡率が低いリチウムイオン二次電池およびこれらの製造方法の提供。

【解決手段】 架橋したポリフッ化ビニリデンまたは、フッ化ビニリデン共重合体を含む電解質をセパレータとして電極シートと積層一体化し、その後電極表面に形成した絶縁層部分で切断した電池要素を積層してなるリチウムイオン二次電池。

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